NAME.....CLASS.....

INDEX NO.....DATE.....SIGN.....

231/2
BIOLOGY
PAPER 2
JUNE 2017
TIME: 2 HOURS

JUNE EXAMINATIONS

Biology
Paper 2
INSTRUCTIONS TO CANDIDATES:

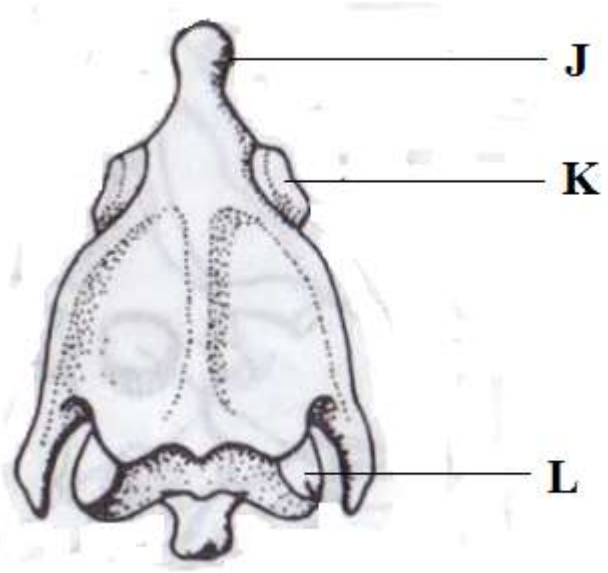
- *Write **your name** and **index number** in the spaces provided.*
- *Answer **all** the questions in Section **A** in the spaces provided.*
- *In section **B** answer questions **6** (compulsory) and either question **7** or **8** in the spaces provided*

For Examiner's Use Only:

SECTION	QUESTIONS	MAXIMUM SCORE	CANDIDATES SCORE
A	1	8	
	2	8	
	3	8	
	4	8	
	5	8	
B	6	20	
	7	20	
	8	20	
	TOTAL	**80**	

This paper consists of 11 printed pages. Candidates should check to ascertain that all papers are printed as indicated and that no questions are missing

1. Study the vertebra diagram below and then answer the questions that follow.



(a)(i) What is the identity of vertebra? (1 mark).....

..... (ii) Identify the view presented by the diagram. (1 mark).....

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(b) Label the parts shown as:

(i) J.....(1 mark)

(ii) K.....(1 mark)

(iii) L.....(1 mark)

(c) Name the vertebra that

(i) Anteriorly articulates the part K.....(1 mark)

(ii) Posteriorly articulates with part L.....(1mark)

(d) Name the resulting movement attained by the articulation referred to in c(i) (1 mark)

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2. (a) Distinguish between a genotype and a phenotype. (1 mark)

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(b) A couple with normal skin pigmentation had three children but their second born was an albino. Using letter A to represent the gene for normal skin colour,work out the genotypes of their children using a genetic cross.(4 marks)

(c) Apart from albinism, state other three disorders in humans caused by gene mutation. (3marks)

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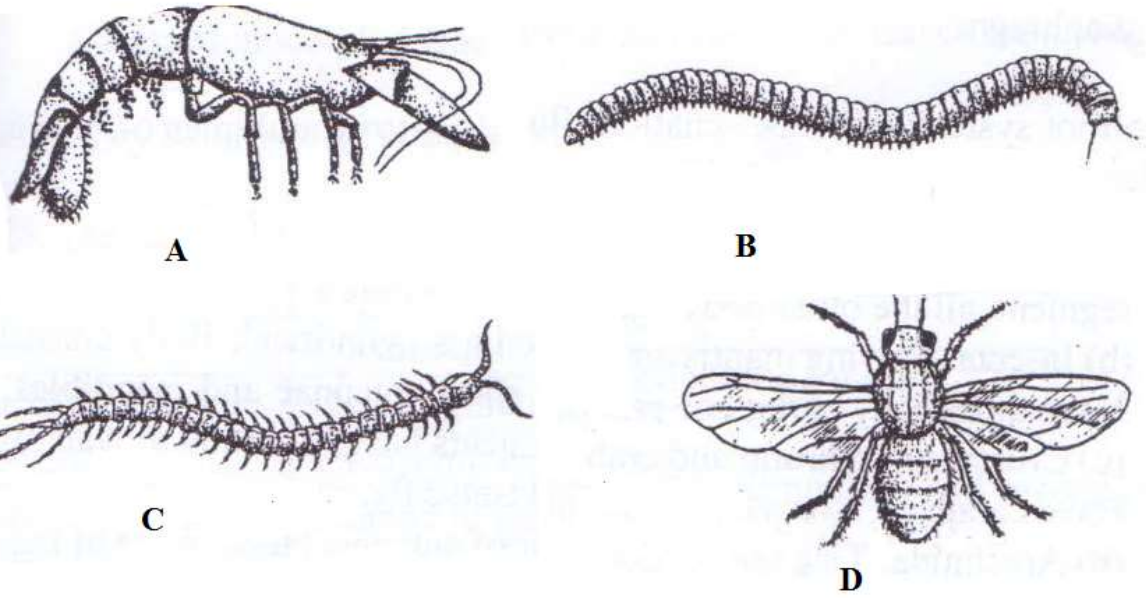
3. Examine the drawings of the organisms shown below.
(a) Construct a dichotomous key that can be used to distinguish the organisms using the following observable features**only**. (6 marks)
(i) Wings
(ii) Pair of antennae
(iii) Legs per segment.



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(b) Give two distinguishing features common to the organisms shown above in (a). (2 marks).....
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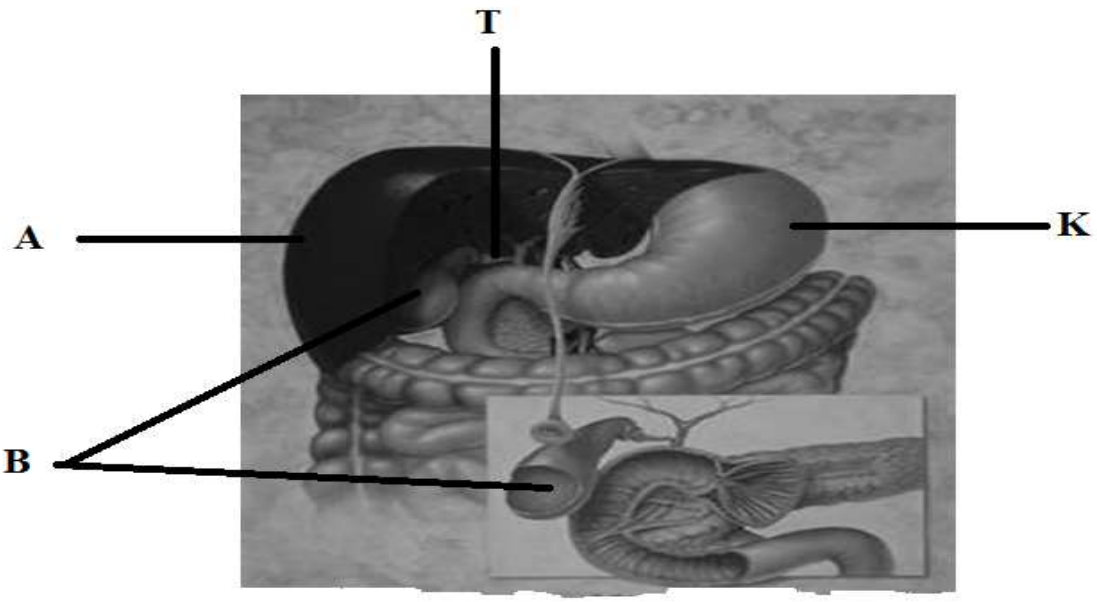
.....4. Use the photograph of mammalian digestive system and associated organs to answer the questions that follow.



(i) Name the structures marked **A**, **R**, **K** and**T**. (4marks)

A…….

B…….

K…….

T……..

(ii) Name an acid found in the structure labelled **K**. (1mark)

……...

(iii) Name the juice stored in the structure labelled **B** and give its function. (2marks)

Juice……..……..

Function……

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…...……...……

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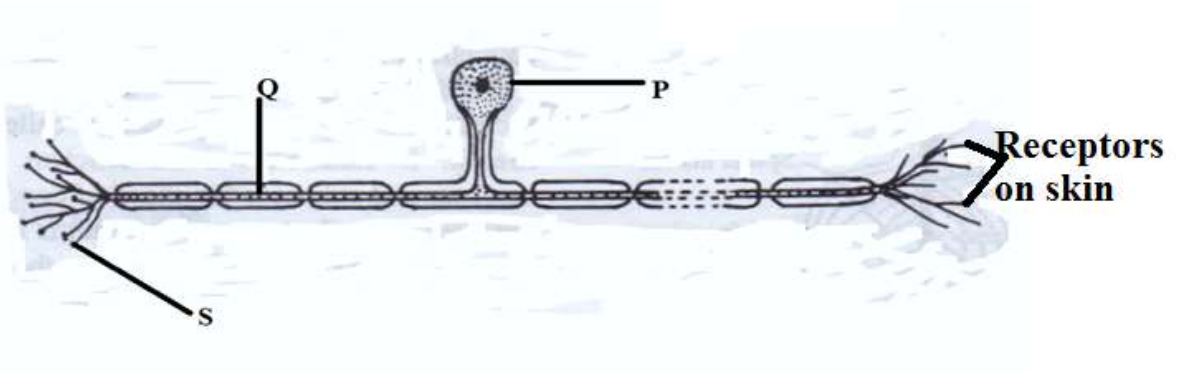
(iv) Label with letter **D** part where function named in (iii) above takes place. (1 mark)

5.The diagram below represents a neurone.Use it to answer questions that follow.



(a)Identify the neurone. (1 mark)

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(b) Using an arrow,show the direction of impulse. (1 mark)

(c)Name the parts labelled.

(i)Q..... (1 mark)

(ii)P.....(1 mark)

(iii)S..... (1 mark)

(d) Name the neurotransmitter substance released at part S. (1 mark)

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(e) Identify the damaged parts of the brain that would exhibit the following symptoms.
(i) Loss of memory. (1 mark)

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(ii) Inability to maintain proper body balance and posture.(1 mark)

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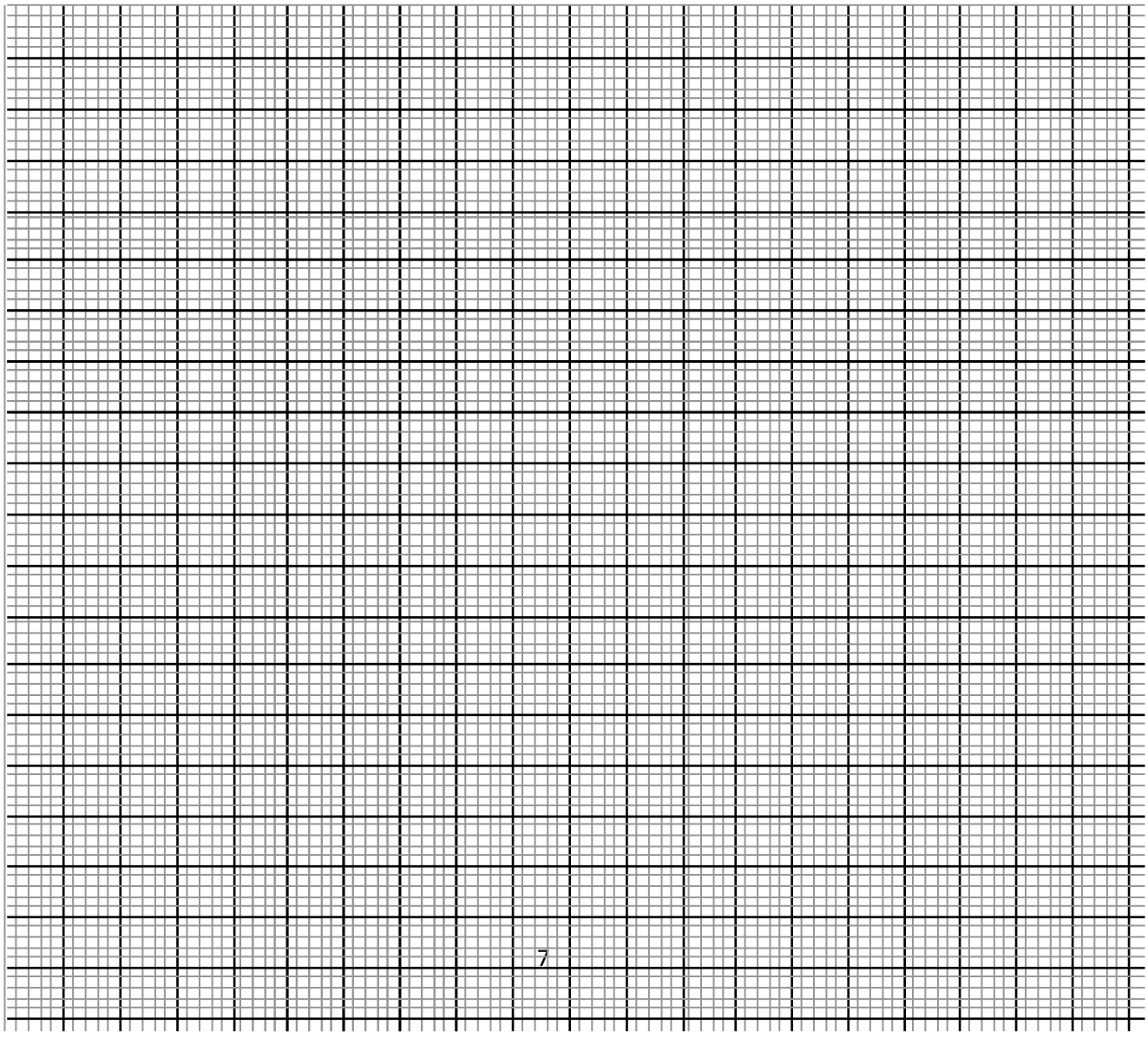
SECTION B: 40 (MARKS)

Answer question 6 (Compulsory) and either question 7 or 8 in the spaces provided after question 8.

6. An investigation was carried out to determine the concentration of various substances in a river following the discharge of untreated sewage into the river. The results are shown in the table below.

Distance downstream in kilometers	0.0	0.5	1	2	4	6	8	10	12	14	16
Concentration of oxygen(mg/L)	10.0	10.0	8.8	5.8	5.0	4.0	5.0	6.0	8.2	9.4	10.0
Concentration of organic matter(mg/L)	10.0	10.0	16.0	15.2	14.2	13.4	12.6	12.4	11.6	10.0	10.0
Concentration of nitrates(mg/L)	10.0	10.0	10.6	12.2	14.2	15.0	15.2	14.6	12.6	11.4	10.0

(a) Using the same axes, draw graphs of concentration of named substances in the water against kilometers. (8 marks)



(b) Identify the point of sewage discharge. (1 mark)

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(c) Account for the changes in the concentration of;

(i) Organic matter. (2 marks)

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(ii) Dissolved oxygen. (2 marks)

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(d) Nitrates. (2 marks).....

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(e) Explain how heavy metals in industrial effluents may accumulate in bodies of humans to toxic levels.(2 marks)

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(f) State four human activities that affect population of animals in game parks. (4 marks).....

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7. (a) Describethe forces involved in the transport of water up the stem to the leaves.(12 marks)
(b) Describe the adaptations of the proximal convoluted tubule to its function.(8 marks)
8. (a) State the possible application of the following plant hormones in agriculture.

(i) Auxins.

(ii) Gibberellins.

(b) Explain how each of the following serves as evidence of organic evolution:

(i) Fossil records. (3 marks)

(ii) Comparative anatomy. (6 marks)

(iii) Geographical distribution. (3 marks)

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